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U.S. Department  
of Transportation

Research and  
Special Programs  
Administration

400 Seventh Street, S.W.  
Washington, D.C. 20590

DOT-E 10326  
(THIRD REVISION)

EXPIRATION DATE: January 31, 2002

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: Honeywell International Inc. (formerly AlliedSignal Aerospace)  
Morristown, NJ
2. PURPOSE AND LIMITATIONS:  

This exemption authorizes the manufacture, mark, sale and use of a non-DOT specification cylinder conforming with all regulations applicable to a DOT specification 3HT cylinder, except as specified herein, for the transportation in commerce of the materials authorized by this exemption. This exemption provides no relief from any Hazardous Materials Regulation (HMR) other than as specifically stated herein.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR §§ 173.302(a)(2) and 175.3 in that non-DOT specification cylinders are not authorized.
5. BASIS: This exemption is based on the application of Honeywell International dated February 3, 2000, submitted in accordance with § 107.109.

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6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name/ Hazardous Material Description	Hazard Class/ Division	Identi- fication Number	Packing Group
Helium, compressed	2.2	UN1046	N/A

7. SAFETY CONTROL MEASURES:

a. PACKAGING - Packaging prescribed is a non-DOT specification cylindrical pressure vessel made from a machined cylinder with an integral machined bottom closure and a circumferentially welded machined top head; having a water capacity not exceeding 260 cubic inches nominal, and a maximum service pressure of 10,000 psig. The pressure vessel must be designed and manufactured conforming with Garret Fluid Systems Division's (GFSD) part 59634-3252938, drawing No. 59364-3252938 and associated drawings, specifications and other information submitted to and on file with the Office of Hazardous Materials Exemptions and Approvals (OHMEA). The pressure vessel must also comply with DOT Specification 3HT (§§ 178.35 and 178.44), except as follows:

§ 178.35(e) *Safety devices*

In lieu of the requirements for a safety relief device as prescribed in § 173.302(a)(2), a heat sensitive pressure relief device (a heat sensitive cutter valve) containing a thermally active powder contained in the sub-assembly shown in GFSD drawing number 3250837 is authorized. The cutter valve is an electro explosive device which is capable of igniting at a temperature not exceeding 500°F and provides an adequate means for releasing the contents of the cylinder when exposed to a fire situation.

§ 178.44(a) *Type, size and service pressure.*

Cylindrical pressure vessel with integral heads and threaded opening as shown in drawings referenced above. Water capacity not to exceed 260 cubic inches nominal with a maximum service pressure of 10,000 pounds per square inch gauge at 70°F.

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§ 178.44(b) *Authorized material.*

Corrosion and heat resistant Inconel 718 nickel alloy conforming with Aerospace Material Specification (AMS) 5662E. Welding rod must conform with AMS 5832C.

§ 178.44(d) *Manufacture.*

By best appliances and methods; dirt and scale to be removed as necessary to afford proper inspection. Machined cylinder and top head must be welded into the configuration as shown in the drawing No. 53964-3252938. Welding must be per Military Specification Mil-W 8611A. All weld joints must be 100 percent radiographed and dye-penetrant inspected after heat treatment.

§ 178.44(e) *Welding or brazing.*

Welding as prescribed in § 178.44(d) of this exemption is authorized.

§ 178.44(f) *Wall thickness.*

(1) Same except for substituting 135,000 psi for 105,000 psi in the last sentence.

(2) and (3) \* \* \*

§ 178.44(g) *Heat treatment.*

Each pressure vessel must be heat treated per Mil-H-6875 and GFSD drawing 3252938 to obtain the mechanical properties specified in § 178.44(p) of this exemption.

§ 178.44(i) *Hydrostatic test.*

Applies except that the minimum test pressure must be 17,000 psig.

§ 178.44(j) *Cycling test.*

(1) \* \* \*

(2) Cycling testing on a lot basis is not required if three cylinders from the first lot are cycle tested to at least 5000 cycles with no failure.

(3) In this exemption, a "lot" means a group of cylinder successively produced having the same:

- (i) Size and configuration;
- (ii) Specified material of construction;
- (iii) Process of manufacture and heat treatment;
- (iv) Equipment of manufacture and heat treatment;  
and
- (v) Conditions of time, temperature and  
atmosphere during heat treatment.

In no case may the lot size exceed 200 cylinders, however, any cylinder processed for use in the required destructive testing need not be counted as being one of the 200.

(4) \* \* \*

§ 178.44(l) *Flattening test.*

Not required.

§ 178.44(m) *Physical test.*

\* \* \*

(1) To determine yield strength, tensile strength, elongation and reduction in area of material: Required on 2 specimens cut from one pressure vessel out of each lot or from a ring of the same thickness as the production pressure vessel and subjected to the same heat treatment as the finished pressure vessel. The test specimen may be round bar or 1/2 inch wide sheet type, and conform to specimen geometries prescribed in ASTM E-8.

§ 178.44(n) *Magnetic particle inspection.*

Not required. Instead, each pressure vessel must be inspected using apparatus and procedures for liquid penetrant examination in accordance with ASTM E-165-65. Inspection shall be performed

externally on the finished pressure vessel after hydrostatic test. Evidence of discontinuities, which in the opinion of the independent inspector may appreciably weaken or decrease the durability of the pressure vessel shall be cause for rejection.

§ 178.44(p) *Acceptable results of tests.*

(1) Not applicable.

(2) Physical tests.

(i) Elongation at least 10% in gage length not less than 2 inches; reduction in area is 12% minimum.

(ii) Ultimate tensile strength is 180,000 psi nominal; yield strength is 150,000 psi nominal.

(3) Minimum burst pressure is 22,670 psig.

(4) Cycling tests.

The design must be qualified by cyclic tests prescribed in § 178.44(j) on three completed pressure vessels. Each pressure vessel must be cycled from zero to service pressure at a rate not exceeding 10 cycles per minute, and for a minimum of 5000 cycles. The pressure vessel may not show any evidence of distortion or failure.

§ 178.44(q) *Rejected pressure vessels.*

(1) Reheat treatment is authorized; subsequent thereto, acceptable pressure vessels must pass all prescribed tests.

(2) Repair of welds is authorized after which reheat treatment is required and subsequent thereto, acceptable pressure vessels must pass all prescribed tests.

§ 178.44(r) *Marking.*

(1) Applies, except that instead of DOT-3HT, pressure vessels must be marked "DOT-E 10326" followed by the service pressure. Marking by low stress type method

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such as electro-chemical etching, vibro-pen or laser marking, which does not decrease the integrity of the pressure vessel, is authorized.

(2) Stamping of elastic expansion is not required.

(3) Name plates - Not required.

§ 178.44(s) *Inspector's report.*

Inspector's report must be appropriately modified to reflect identification and conformance with this exemption.

b. TESTING - Each pressure vessel may not be filled and shipped unless it has been reinspected and hydrostatically retested every 5 years in accordance with § 173.34(e) as prescribed for DOT-3HT cylinders, except that the rejection elastic expansion criteria does not apply.

8. SPECIAL PROVISIONS:

a. In accordance with the provisions of Paragraph (b) of § 173.22a, persons may use the packaging authorized by this exemption for the transportation of the hazardous materials specified in paragraph 6, only in conformance with the terms of this exemption.

b. A person who is not a holder of this exemption, but receives a package covered by this exemption, may reoffer it for transportation provided no modifications or changes are made to the package and it is offered for transportation in conformance with this exemption and the HMR.

c. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.

d. Each packaging manufactured under the authority of this exemption must be marked with a registration symbol designated by the Office of Hazardous Materials Exemptions and Approvals for a specific manufacturing facility.

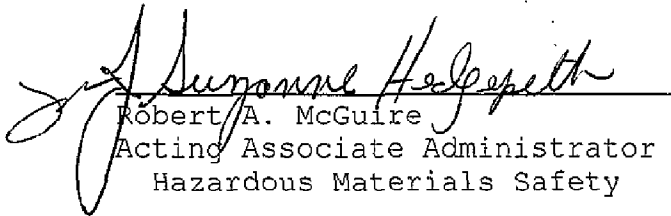
e. A current copy of this exemption must be maintained at each facility where the package is manufactured under this exemption. It must be made available to a DOT representative upon request.

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- f. The cylindrical pressure vessels authorized under this exemption may be used in military weapons systems or military aircraft only. A copy of the inspector's report on the first lot required in § 178.44(s) must be submitted to the OHMEA prior to initial shipment.
- g. Pressure vessels must be shipped in strong outside packagings in conformance with § 173.301(k).
- h. The pressure vessel service life may not exceed 10 years or 10 refills whichever comes first.
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, cargo aircraft only.
10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each aircraft used to transport packages covered by this exemption. The shipper shall furnish a copy of this exemption to the air carrier before or at the time the shipment is tendered.
11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
- o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, Parts 171-180.
  - o Registration required by § 107.601 et seq., when applicable.
- Each "Hazmat employee", as defined in § 171.8, who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.
- No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.
12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable.

(Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must also inform the AAHMS, in writing, as soon as practicable of any incidents involving the package and shipments made under this exemption.

Issued at Washington, D.C.

  
Robert A. McGuire  
Acting Associate Administrator for  
Hazardous Materials Safety

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(DATE)

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590.  
Attention: DHM-31.

The original of this exemption is on file at the above office. Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

Copies of exemptions may be obtained from the AAHMS, U.S. Department of Transportation, 400 7th Street, S.W., Washington, DC 20590-0001, Attention: Records Center, 202-366-5046.

Dist: FAA, FHWA  
PO: KFW